

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

SCOTT ANDREW (SUTHERLAND)

Appln. No.: 09/088,259

Group Art Unit: 3611

Filed: June 1, 1998

Examiner: Unknown

For: COLLAPSIBLE BABY STROLLER AND RELEASABLE LOCKING
AND FOLDING MECHANISM THEREFOR

* * * * *

December 17, 1998

PETITION FOR CORRECTION OF INVENTORSHIP
PURSUANT TO 37 CFR 1.48(a)

Assistant Commissioner
for Patents
Washington, DC 20231

Sir:

Applicants hereby petition the Assistant Commissioner to
correct the inventorship in the above-captioned patent
application for the following reasons:

1. On June 1, 1998, the above-captioned patent application
was filed in the Patent Office by the inventors of the subject
matter of the patent application, Scott Andrew Sutherland and
Andreas H. von Flotow. Copies of the Utility Patent Application
Transmittal letter, the patent application and the Declaration
for Utility or Design Patent Application, as filed, are attached

hereto.

12/22/1998 SANDARA 00000157 09088259
01 FC:122

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98 DEC 24 AM 9:01

2. The filing receipt erroneously gives the name of Scott Andrew Sutherland as "Scott Andrew". A copy of the filing receipt is attached hereto.

3. The first page of the patent application indicates that Scott A. Sutherland and Andreas H. von Flotow are the inventors of the subject matter of the patent application.

4. The Declaration indicates that Scott A. Sutherland is the first named inventor of the subject matter of the patent application.

5. Andreas H. von Flotow, without any deceptive intention on his part, failed to sign the Declaration. Instead, Andres H. von Flotow indicated in the Declaration that all correspondence should be directed to him.

6. Neither Andreas H. von Flotow or Scott A. Sutherland are patent attorneys familiar with the filing requirements of the Patent Office.

7. Thus, the error in inventorship in the Declaration arose without any deceptive intention on the part of the person named as inventor, i.e., Scott A. Sutherland, or on the part of the person who through error was not named as an inventor, i.e., Andreas H. von Flotow.

8. A statement from Andreas H. von Flotow that the error in inventorship occurred without deceptive intention on his part is attached hereto.

9. A new Declaration by the actual inventors is attached hereto.

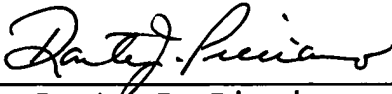
10. The Petition Fee required by 37 CFR 1.48(a)(3) as set forth in 37 CFR 1.17(i) accompanies this Petition.

11. The written consent of the assignee of the patent application, Hood Technology Corporation, is attached hereto.

Accordingly, it is respectfully requested that the inventorship in the above-captioned patent application be corrected to Scott A. Sutherland and Andreas H. von Flotow.

Respectfully submitted,

BELL, BOYD & LLOYD

By: 
Dante J. Picciano
Reg. No. 33,543

BELL, BOYD & LLOYD
P.O. Box 1135
Chicago, IL 60690-1135
Tel.: (312) 372-1121

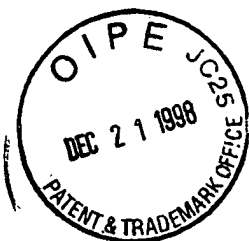
Please type a plus sign (+) inside this box: ☐

PTO/SB/05 (4/98)

Approved for use through 09/30/2000. OMB 0651-0032

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No.

First Inventor or Application Identifier

Scott, A. Sutherland

Title

Collapsible Baby Stroller And...

Express Mail Label No.

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ Specification (preferred arrangement set forth below) [Total Pages 15]
 - Descriptive title of the invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the invention
 - Brief Summary of the invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 6]
4. Oath or Declaration [Total Pages 2]
 - a. ☒ Newly executed (original or copy)
 - b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 16 completed)
 - i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

* NOTE: EXEMPTIONS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27) EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.29)

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

5. ☐ Microfiche Computer Program (Appendix)
6. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. ☐ Computer Readable Copy
 - b. ☐ Paper Copy (identical to computer copy)
 - c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. ☐ Assignment Papers (cover sheet & document(s))
8. ☐ 37 C.F.R. § 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney
9. ☐ English Translation Document (if applicable)
10. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
11. ☐ Preliminary Amendment
12. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
13. ☒ * Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired (PTO/SB/09-12)
14. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
15. ☐ Other: _____

16. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP)

of prior application No.: _____

Prior application information: Examiner _____

Group / Art Unit: _____

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

☐ Customer Number or Bar Code Label

(Insert Customer No. or Attach bar code label here)

or ☒ Correspondence address below

Name	Andreas von Flotow			
	Hood Technology Corporation			
Address	1750 Country Club Road			
City	Hood River	State	OR	Zip Code 97031
Country	USA	Telephone	541-387-2286	Fax 541-387-2266

Name (Print/Type)	Andreas von Flotow	Registration No. (Attorney/Agent)	
Signature	A. von Flotow	Date	28 May 98

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

PTO 102X
(Rev. 8-95)

FILING RECEIPT

DEC 21 1998



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	TOT CL	IND CL
09/088,259	06/01/98	3611	\$395.00		6	18	2

ANDREAS H VON FLOTOW
HOOD TECHNOLOGY CORPORATION
1750 COUNTRY CLUB ROAD
HOOD RIVER OR 97031

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Application Processing Division's Customer Correction Branch within 10 days of receipt. Please provide a copy of the Filing Receipt with the changes noted thereon.

Applicant(s)

SCOTT ANDREW, HOOD RIVER, OR.

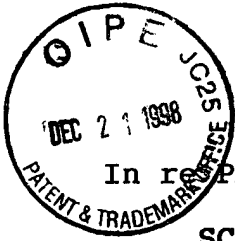
FOREIGN FILING LICENSE GRANTED 06/22/98

* SMALL ENTITY *

TITLE

COLLAPSIBLE BABY STROLLER AND RELEASABLE LOCKING AND FOLDING
MECHANISM THEREFOR

PRELIMINARY CLASS: 280



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

SCOTT ANDREW (SUTHERLAND)

Appln. No.: 09/088,259

Group Art Unit: 3611

Filed: June 1, 1998

Examiner: Unknown

For: COLLAPSIBLE BABY STROLLER AND RELEASABLE LOCKING
AND FOLDING MECHANISM THEREFOR

* * * * *

Statement of Andreas von Flotow
Pursuant to 37 CFR 1.48(a)(1)

Assistant Commissioner
for Patents
Washington, DC 20231

Sir:

I, the undersigned, Andreas von Flotow, declare as follows:

1. On June 1, 1998, the above-captioned patent application was filed in the Patent Office by the inventors of the subject matter of the patent application, Scott Andrew Sutherland and Andreas H. von Flotow.

2. The Declaration, as filed, indicates that Scott A. Sutherland is the first named inventor of the subject matter of the patent application.

3. I, without any deceptive intention on my part, failed to sign the Declaration. Instead, I indicated in the Declaration that all correspondence should be directed to me.

4. Neither I or Scott A. Sutherland are patent attorneys familiar with the filing requirements of the Patent Office.

5. Thus, the error in inventorship in the Declaration arose without any deceptive intention on the part of the person named as inventor, i.e., Scott A. Sutherland, or on the part of the person who through error was not named as an inventor, i.e., Andreas H. von Flotow.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-captioned application or any patent issuing thereon.

Date: 12 Dec 98

A. von Flotow
Andreas von Flotow



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

SCOTT ANDREW (SUTHERLAND)

Appln. No.: 09/088,259

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Filed: June 1, 1998

Examiner: Unknown

For: COLLAPSIBLE BABY STROLLER AND RELEASABLE LOCKING
AND FOLDING MECHANISM THEREFOR

* * * * *

**Consent of Assignee under 37 CFR 3.73(b)
Pursuant to 37 CFR 1.48(a)(4)**

Assistant Commissioner
for Patents
Washington, DC 20231

Sir:

I, the undersigned, Andreas von Flotow, declare as follows:

1. The above-captioned patent application was assigned by Scott Andrew Sutherland and Andreas H. von Flotow to Hood Technology Corporation on November 17, 1998. The Assignment was submitted to the Patent Office for Recordation on December 8, 1998. A copy of the executed Assignment is attached hereto.

2. I am the owner of Hood Technology Corporation and consent to the filing of the Petition for Correction of Inventorship Pursuant to 37 CFR 1.48(a) to change inventorship to in the above-captioned patent application to Scott A. Sutherland and Andreas H. von Flotow.

SCOTT ANDREW (SUTHERLAND) - U.S. PATENT APPLICATION 09/088,259

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-captioned application or any patent issuing thereon.

Date: 12 Dec 98

A. von Flotow

Andreas von Flotow
Owner
HOOD TECHNOLOGY CORPORATION

ASSIGNMENT

WHEREAS, the undersigned, to wit: ANDREAS H. VON FLOTOW and SCOTT A. SUTHERLAND (hereinafter, collectively the "ASSIGNORS"), are the lawful owners of an invention entitled: COLLAPSIBLE BABY STROLLER AND RELEASABLE LOCKING AND FOLDING MECHANISM THEREFOR, for which Patent Application of the United States was filed on June 1, 1998, Serial No. 09/088,259;

AND WHEREAS, HOOD TECHNOLOGY CORPORATION (hereinafter "ASSIGNEE"), a corporation duly organized and existing under the laws of the state of Oregon, and having its principal office and place of business at 1750 Country Club Road, Hood River, Oregon 97031, desires to acquire an interest therein;

NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, said ASSIGNORS do hereby sell, assign, and transfer, and hereby agree to assign, unto ASSIGNEE, its successors, assigns and legal representatives, the full and exclusive right, title and interest to said invention in the United States of America and all foreign countries, as described in the aforesaid application, and to said application, continuations, continued prosecution applications, divisions, reissues and substitutes of or claiming the benefit of said application, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and ASSIGNORS hereby authorize and request the Commissioner of Patents to issue all Letters Patents issuing

therefrom to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives.

ASSIGNORS hereby agree to execute any papers requested by ASSIGNEE, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

ASSIGNORS furthermore agree upon request of said ASSIGNEE, its successors, assigns and legal representatives, and without further remuneration, to execute any and all papers desired by said ASSIGNEE, its successors, assigns and legal representatives, for the filing and granting of foreign applications and the perfecting of title thereto in said ASSIGNEE, its successors, assigns and legal representatives.

Signature

Date Signed

A. von Flotow

17 Nov 98

Name: ANDREAS H. VON FLOTOW -

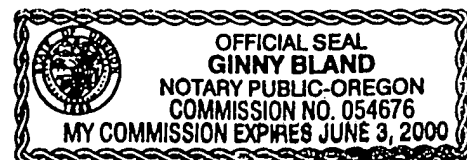
Hood River County
State of Oregon ss.

On this 17 day of November, 1998, before me, a notary public, in and for the aforementioned state and county, personally appeared the person whose name is subscribed to the foregoing instrument, and executed the foregoing instrument in my presence for the purpose contained therein, by signing his name thereto.

IN WITNESS WHEREOF, I hereto set my hand and official seal.

Date: November 17, 1998

Ginny Bland
Notary Public



My Commission Expires: June 3, 2000

Signature

Date Signed

[Signature]
Name: SCOTT A. SUTHERLAND

Nov 17, 1998

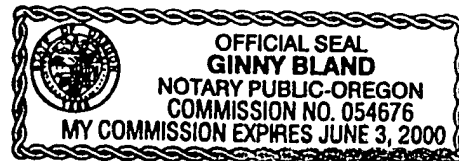
Wash River County,
State of Oregon, SS.

On this 17 day of November, 1998, before me, a notary public, in and for the aforementioned state and county, personally appeared the person whose name is subscribed to the foregoing instrument, and executed the foregoing instrument in my presence for the purpose contained therein, by signing his name thereto.

IN WITNESS WHEREOF, I hereto set my hand and official seal

Date: November 17, 1998 Ginny Bland
Notary Public

My Commission Expires: June 3, 2000



Please type a plus sign (+) inside this box → ☐

PTO/SB/01 (12-97)
Approved for use through 9/30/00. OMB 0651-0032
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#6

DECLARATION — Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☐ Customer Number

OR

☐ Registered practitioner(s) name/registration number listed below

Place Customer
Number Bar Code
Label here

Name	Registration Number	Name	Registration Number

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

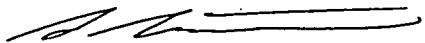
Direct all correspondence to: ☐ Customer Number or Bar Code Label

OR ☐ Correspondence address below

Name	Andreas von Flotow				
Address	Hood Technology Corporation				
Address	1750 Country Club Road				
City	Hood River	State	OR	ZIP	97031
Country	USA	Telephone	(541) 387-2298	Fax	(541) 387-2266

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))		Family Name or Surname					
Scott Andrew		Sutherland					
Inventor's Signature				Date	28 May 98		
Residence: City	Hood River	State	OR	Country	USA	Citizenship	CAN
Post Office Address	3886 Fairview Dr.						
Post Office Address	Hood River, OR 97031						
City	Hood River	State	OR	ZIP	97031	Country	USA

☐ Additional Inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto

Please type a plus sign (+) inside this box → ☐

PTO/SB/01 (12-97)
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Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

☒ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number

First Named Inventor

Scott A. Sutherland

COMPLETE IF KNOWN

Application Number

/

Filing Date

Group Art Unit

Examiner Name



As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**COLLAPSIBLE BABY STROLLER
AND RELEASIBLE LOCKING AND FOLDING MECHANISM THEREFOR**

the specification of which

(Title of the Invention)

☒ is attached hereto
OR

☐ was filed on (MM/DD/YYYY)

as United States Application Number or PCT International

Application Number

and was amended on (MM/DD/YYYY)

(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

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6/B
Spec
(NE)
THIS COPY OF ORIG SPEC
- NO NEW MATTER
- CONFIRMED w/
ATTY ON 2/11/00
2/11/00

Patent Application of
Scott A. Sutherland and Andreas H. von Flotow
for
COLLAPSIBLE BABY STROLLER
AND RELEASABLE LOCKING AND FOLDING MECHANISM THEREFOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to wheeled infant carriages or designed to carry an infant smoothly and safely while walking, jogging or traversing uneven, rough, or unpaved terrain. And more particularly to a design conveniently portable and collapsible.

2. Description of The Prior Art

Traditionally, baby strollers have been used to push an infant slowly on a relatively hard, smooth floor or paved surface. As a result, the strollers were made with short wheeled bases and small wheels. These strollers work well at slow speed, but are extremely unwieldy and even dangerous on rough surfaces or at higher speeds.

As parents have become more health conscious, jogging and fast walking have become popular pastimes. Because baby strollers were not designed to be operated at high speed or on rough terrain, it was infeasible for a parent to jog or walk fast using a traditional baby stroller. Even for non-jogging parents, the need for an improved baby stroller has been apparent. The small,

plastic wheels and short wheel bases customarily used for the baby strollers are almost useless when it is desired to walk with an infant in a grassy park or on a rough road or sidewalk. Parents end up not walking with the infant at all or only walking in limited areas.

Recently, all-terrain baby strollers have been designed to overcome these problems. These strollers typically employ much larger wheels and longer wheel bases. The stroller frame and frame connections are constructed to be stronger and larger to handle the heavy-duty use they may receive. These all-terrain strollers have their drawbacks. The increased size has made them difficult to store and transport and the folding/collapsing mechanisms are time consuming and cumbersome. For this reason, the present invention provides a quick and easy method of collapsing the stroller for storage or transport.

3. Objects and Advantages

Collapsible strollers are not a new concept. The collapsing process for most strollers, however, typically requires the use of both hands, often requires the application of large forces, and may be dangerous due to scissoring of truss-like members of the stroller structure. Most collapsing mechanisms are not intuitive to the user and require a lesson from a sales person or studying of instructions. Often, the parent is holding packages or the infant in one arm and has only one hand free to collapse and stow the stroller. The present invention provides an intuitive folding mechanism, requiring only one hand to collapse or unfold the stroller. Safeguards assure that the stroller collapses only when desired by the parent. Further, there are no pinch points or scissoring members in the folding mechanism.

When jogging with a conventional all-terrain stroller, the axle connecting the two rear tires often impedes the stride of the jogger (especially joggers with long strides). In the present invention, the rear wheels are cantilevered, giving the jogger clearance for a long stride.

Other novel features of the design are the use of an over-center mechanism to deploy a sun canopy on the stroller and another over-center mechanism to engage a foot-activated parking brake.

SUMMARY OF THE INVENTION

The present invention is an all terrain/jogging, portable, collapsible baby stroller. The stroller frame consists of three cantilevered, tubular sections, which are hinged and constrained to move together by a means for such purpose. The three cantilevered sections are the front fork, which holds the front tire, the handle bar, and the rear support, on which the rear tires are mounted.

The means for hinging and constraining the motion of the cantilevered sections consists of a mechanism on either side of the stroller. Each mechanism consists of two meshing partial gears and a spring-loaded piston, which moves in line with the rear support. Secured to the side of each gear is a knife blade follower, which comes in contact with the piston in the locked and unfolded position. One gear is fixed to the front fork while the other is fixed to the handle bar. In the locked and unfolded position, the rotation of the gears with respect to one another is constrained by a flat in one direction and the knife blade followers against the extended spring loaded piston in the other direction. The cantilevered sections are constrained at fixed angles to one another. In this embodiment, the front fork forms approximately a 90-degree angle with the rear support and approximately a 180-degree angle with the handle bar. The rear support bisects the angle between the handle bar and the front fork.

To collapse the stroller, the stroller is lifted by a strap which is connected on either end to a lever, which depresses the spring-loaded piston on each side of the stroller. With the depression of the spring-loaded piston, the rotation of the gears relative to one another is no longer constrained. Continuing to hold the strap causes the stroller to collapse under its own weight; all of the cantilevered sections rotate into positions approximately parallel to one another.

The front fork consists of two separate pieces of tubing. At one end, each piece is fixed to the folding mechanism. At the opposite end a notch is cut in each tubular piece to accommodate the axle of the front tire. The notch allows the user to quickly remove the front tire.

The handle bar is made from a single piece of tubing or bar stock bent through 180 degrees so that the ends of the piece are parallel to one another. Each end is fixed to one of the two folding

mechanisms. The bent portion of the tubing is typically from where the stroller will be pushed. Therefore, it is coated with foam for comfort.

The present embodiment of the invention contains a retractable canopy to shelter the infant from the elements. The canopy is made from a piece of fabric. The front edge of the fabric is secured to a batten or bent rod, which gives the canopy its shape. The rear edge is secured to the handle bar. The forward batten is connected to the handle bar through two over-center mechanisms. These over-center mechanisms allow the canopy to be fully deployed or fully retracted, in a firm and stable manner.

Each over center mechanism consists of a casing, a spring-loaded rod and a rotating piece. The spring-loaded rod is constrained as a slider joint by the casing and as a pin joint by the rotating piece. The casing is fixed to the handle bar and the rotating piece is fixed to the batten. The rotational freedom of the rotating piece is constrained by a groove in the casing. Because of the motion constraints on the rotating piece, the canopy will become fully deployed if the canopy is moved more than half way to the deployed position or fully retracted if the rotating piece is moved less than half way to the deployed position.

The rear wheels are mounted to the rear support via a hub assembly for such purpose. Each rear wheel axle fits into a hole in a hub assembly case, which is injection molded plastic. The axle is notched and held in place by a spring-loaded pin, which fits in the notch. The spring-loaded pin acts as a quick-release mechanism. When the pin is pulled, the axle can easily be removed from the hub assembly. To replace the wheel, the axle is inserted into the hub assembly and snaps into place, as the spring-loaded pin seats in the groove in the axle.

The hub assembly also houses a foot brake. The foot brake employs an over-center mechanism similar to the one used for the canopy deployment. The foot brake lever, typically made from stamped steel, is pinned to the hub assembly casing. When the lever is rotated, a finger, which is part of the lever, engages with a toothed disk, which is fixed to the wheel. The rotating motion of the lever is affected by an over-center mechanism. The over-center mechanism consists of a spring-loaded rod, pinned to the lever on one end and fixed as a slider by the hub assembly casing on the other end. When the lever is between the fully-engaged and the fully-

disengaged positions, the over-center mechanism tends to move the lever to either position. Another important feature to the design of this foot brake is the use of plastic or metal balls on the rod, between which the spring seats. The balls prevent the spring from binding on the hub assembly casing or the lever and allow low friction movement.

BRIEF DESCRIPTION OF THE DRAWINGS

The above features, advantages, and object of the present invention will more fully be appreciated through consideration of the following drawings in which:

FIG 1 shows an isometric view of the present invention, a collapsible all-terrain stroller.

FIG 2 shows an exploded view of the folding mechanism, which allows the user to easily fold and unfold the stroller.

FIG 3 shows orthogonal views depicting the functionality of the folding mechanism.

FIG 4 shows an exploded view of the canopy deployment mechanism.

FIG 5 depicts the functionality of the canopy deployment mechanism.

FIG 6 shows an orthogonal view of the hub assembly.

FIG 7 shows isometric and orthogonal views of the folding procedure.

REFERENCE NUMERALS IN DRAWINGS

- 2 Front Fork
- 3 Rear Support
- 4 Handle Bar
- 10 Folding Mechanism
 - 11 Outer Half of Folding Mechanism Case
 - 12 Inner Half of Folding Mechanism Case
 - 13 Forward Partial Gear
 - 14 Rear Partial Gear
 - 15 Knife Blade Follower on Forward Partial Gear
 - 16 Knife Blade Follower on Rear Partial Gear
 - 17 Spring Loaded Piston
 - 18 Release Lever
 - 19 Fulcrum Plate
 - 20 Fulcrum Pin
 - 21 Gear Hubs
 - 22 Spring for Piston
- 30 Front Wheel
- 32 Foot Rest
- 34 Release Strap
- 36 Infant Seat
- 40 Hub Assembly

41	Hub Assembly Case
42	Quick Release Pin
43	Quick Release Spring
44	Brake Lever
45	Brake Lever Fulcrum
46	Over-center Mechanism Rod
47	Over-center Mechanism Spring
48	Nylon Balls
49	Toothed Disk
50	Assembly Bolts
51	Rear Axle
60	Mechanism for retracting Canopy
61	Over-center Mechanism Rod
62	Canopy Deployment Mechanism Casing
63	Rotating Piece
64	Forward Canopy Batten
65	Over-center Mechanism Spring
66	Fastener from Casing to Handle Bar
67	Fastener from Casing to Handle Bar, mating with groove in rotating piece
68	Fastener about which rotating piece rotates
69	Canopy

DETAILED DESCRIPTION OF THE INVENTION

1. *Overall Stroller Configuration*

Referring now to the drawings, particularly FIG 1, there is shown a three-wheeled all terrain collapsible infant stroller. Three rigid assemblies 2-4, which are connected to one another via two folding mechanisms 10, form the fundamental structure of the stroller.

The front fork 2 consists of two pieces of tubing 2a-2b. One end of each front fork section 2a-2b is notched in order to accommodate the axle of the front wheel 30, allowing for easy disassembly. The other end of each front fork half 2a-2b is attached to a folding mechanism 10. A footrest 32 is secured to both halves 2a-2b of the front fork 2 above the front wheel 30.

The rear support 3 consists of two rear legs 3a-3b and a cross brace 3c, which are made from tubing. For each leg 3a-3b, one end is secured to a folding mechanism 10 and the other secured to a hub assembly 40. The cross brace 3c is secured to both rear legs 3a-3b, sufficiently close to the folding mechanism 10 to provide clearance for long strides.

The handle bar 4 is made from a single piece of tubing or bar stock, bent through 180 degrees. Each end of the handle bar 4 is secured to one of the two folding

mechanisms 10. A retractable canopy 60 is attached to the handle bar 4 in order to protect the infant from the elements.

2. *Releasable Locking and Folding Mechanism*

A key feature of the present invention is a novel folding mechanism 10. An exploded view of the folding mechanism 10 is shown in FIG. 2 and a functionality view is shown in FIG. 3. The folding mechanisms 10 control the angles between the front fork 2, the rear support 3, and the handle bar 4, and thus enables the user to collapse or unfold the stroller with ease. Within the folding mechanism are two meshing partial gears 13-14, made of stamped steel in the preferred embodiment of the present invention. The gears 13-14 rotate about gear hubs 21, which are fixed to the folding mechanism case, consisting of an outer 11 and inner 12 half. Partial gear 13 has an appendage which is fastened to the handle bar 4 and partial gear 14 has an appendage which is fastened to the front fork 2. The case 11-12 is secured to the rear support 3. The meshing of the gears 13-14 constrains the relative angle between the handle bar 4 and the front fork 2, so that when the handle bar 4 is rotated toward the rear support 3, the front fork 2 rotates toward the rear support 3 and vice versa. This is a key feature in the design because it enables the stroller to be unfolded by merely lifting on the handle bar 4. Gravity rotates the handle bar 4 away from the rear support 3, and the front fork 2 swings out into position.

It is desired to keep the stroller in a locked and open position until the user wishes to fold it up for storage or transport. The folding mechanism 10 contains features to accomplish this. Each gear 13-14 has a knife blade follower 15-16, made from stamped steel in the preferred embodiment, fastened to it. Knife blade follower 15 is fixed to the inner side of partial gear 13 and knife blade follower 16 is fixed to the outer side of partial gear 14 so that the followers 15-16 do not interfere with one another when the stroller is collapsed. When the stroller unfolds into a fully open position, a piston 17, is pushed down by the knife blade followers 15-16 against a loaded spring 22 until the followers 15-16 reach the fully open position and the piston 17 is forced between the followers 15-16 by the spring 22. Thus the rotation of the handle bar 4 and front fork 2 relative to the rear support 3 is constrained by a lack of gear teeth in one direction and the knife blade followers 15-16 against the spring-loaded piston 17 in the other direction.

A key feature of the folding mechanism 10 is that the piston 17 and followers 15-16 are engaging in a wedging manner due to the angled piston 17 - follower 15-16 engagement surfaces. This wedged piston 17 has sufficient travel to accommodate manufacturing tolerances and wear accumulations by continuing to wedge the followers apart until the mechanism 10 is firmly locked open. The piston spring 22 is adequately sized to always drive the piston 17 into its highest possible position, maximizing the rigidity of the entire frame structure.

It is also desired to be able to easily collapse the stroller for storage or transport. The stroller is unable to collapse until the spring-loaded piston 17 is retracted so that the gears 13-14 are free to rotate relative to the case 11-12. In order to retract the spring-loaded piston 17, a release lever 18 rocks about fulcrum pin 20, which is held in place by fulcrum plate 19. The fulcrum plate 19 is fastened to the inner half 12 of the case so that when a force is applied to the long arm of the release lever 18, a force which tends to retract the spring-loaded piston 17 is generated.

In the preferred embodiment of the invention, a release strap 34 is connected to the release lever 18 on both folding mechanisms 10. The release strap 34 lays in the seat 36 so that when the infant is removed from the stroller, the parent can lift on the release strap 34, which retracts the spring-loaded pistons 17, allowing the handle bar 4 and front fork 2 to rotate toward the rear support 3. Because the center of gravity of the handle bar 4 is typically above the folding mechanism 10, the stroller tends to collapse under its own weight when the release strap 34, is pulled, thus requiring only one free hand to collapse the stroller. Similarly, when unfolding the stroller, lifting the handle bar 4 tends to unfold the stroller. When the stroller fully open, the spring-loaded piston 17, moves between the knife blade followers 15-16, locking the stroller in its operational position.

3. *Canopy Deployment Mechanism*

The mechanism 60 for deploying and retracting a canopy 69 is a novel feature of the present invention. An exploded view of this mechanism is shown in FIG. 4 and a functionality view is shown in FIG. 5. This mechanism consists primarily of a spring-loaded rod 61, a mechanism casing 62, and a rotating piece 63. The casing 62, made from injection molded plastic in the preferred embodiment, is fixed to the handle bar 4 with fasteners 66-67. The rotating piece 63,

made from injection molded plastic in the preferred embodiment, rotates about fastener 68, which mates with the casing 62. Spring 65 fits around rod 61. The spring-loaded rod 61 has a slider joint with the casing 62 and a pin joint with the rotating piece 63. Batten 64 is constrained to move with the rotating piece 63 via an interference fit between the two pieces. As the rotating piece 63 rotates, the spring 65 becomes compressed. The compressed spring 65 tends to force the canopy 69 to its open position or to its deployed position depending on whether it has moved more than half way through its range of motion. The motion of the rotating piece 63 is further constrained in its rotation by fastener 67 being seated in groove 63a of the rotating piece 63.

4. *Hub Assembly*

The hub assembly 40, shown in FIG. 6 serves the following functions:

- 1) Provide a hub for the rear wheel axles.
- 2) Provide a quick release for the rear wheels.
- 3) Provide a rear wheel parking brake, deployable with an easy foot motion.

There are two hub assemblies 40 in the preferred embodiment; one fastened to the end of each of the rear legs 3a-3b. Each rear wheel 31 has its own axle 51. The axle 51 fits into the injection-molded hub assembly case 41 held together with assembly bolts 50, which are housed by the case 41 as well. A notch 52 is machined in the axle 51 in order to mate with a spring-loaded quick release pin 42. The quick release pin 41 prevents the axle 51 from separating from the hub assembly 40. If the user desires to remove a rear wheel 31, the quick release pin 41 is pulled away from the axle 51 and the wheel is easily removed. The spring 43 pulls the release pin 41 back so that when the axle 51 is reinserted into the hub assembly 40, it snaps securely into place.

In order to prevent the stroller from rolling when parked, a foot activated parking brake feature is designed into the hub assembly 40. A brake lever 44, made from stamped steel in the preferred embodiment, has its fulcrum 45 fixed to the hub assembly case 41. The brake lever 44 has a bulbous end 44a, in the preferred embodiment, to facilitate easy deployment or release of

the brake with a simple foot motion. When the brake lever 44 is rotated down, an appendage 44b on the brake lever 44 engages with a toothed disk 49, which is fixed to the rear wheel 31. It is undesirable to have the brake inadvertently deploy or release. For this reason, an over-center mechanism is included in the preferred embodiment. A spring-loaded rod 46 is pinned to the brake lever 44 and has a slider joint with the hub assembly case 41. The spring-loaded rod 46 is designed so that the brake lever 44 is most stable in either the fully deployed or fully retracted positions and only a deliberate foot motion from the user will change the foot brake position. In the preferred embodiment, plastic or metal balls are placed on the rod 46 on both sides of the spring 47 in order to prevent the spring 47 from binding on the brake lever 44 or hub assembly case 41.

5. *Folding Sequence*

The folding sequence is outlined here and depicted in FIG. 7:

- 1) Depress foot brake levers 44 on both rear wheels 31 and retract canopy 60.
- 2) Remove infant from seat 36.
- 3) Grab hold of the release strap 34, which is situated in the seat 36, and lift on the strap 34 and continue to hold it. The release strap 34 will pull on both of the release levers 18, which retract the spring-loaded pistons 17. The handle bar 4, because its center of gravity is above the folding mechanism 10, will tend to rotate toward the rear support 3, and because it is geared to the front fork 2, the front fork 2 will rotate toward the rear support 3 as well.
- 4) The three rigid assemblies 2-4 will be parallel with one another and the stroller is ready for transport or storage. If it is desired to reduce the size of the stroller even more, the quick release pins 42 can be pulled to remove the rear wheels 31 and the front wheel 30 can also be removed.

CLAIMS

What is claimed is:

1. A conveniently transportable infant stroller for safely and smoothly carrying an infant over various terrain at speeds faster than average walking speed; said infant stroller comprising:
a frame assembly consisting of three rigid members, hinged and constrained to move together by a releasable locking and folding means.

three wheels in tricycle relationship, supported by said frame assembly, each with its own axle.

axle support means between said frame assembly and said wheels.

seat means attached to said frame assembly, said seat means being dimensioned and positioned such that the center of gravity of the infant seated therein is generally between forward and rear wheels.

means of sheltering infant from weather.

shelter support means between said means of sheltering and said frame assembly; said shelter support means giving said sheltering means a plurality of positions.

2. A releasable locking and folding mechanism for hinging three cantilevered, rigid members, constraining them to move together in a controlled manner. Said mechanism comprising:

two meshing geared components, which rotate relative to a fixed component,

a follower secured to each said meshing geared components,

a spring-loaded piston secured to the fixed component,

a means of retracting said piston against said spring, secured to said fixed component.

3. The releasable locking and folding mechanism in claim 2, wherein

one said cantilevered, rigid assembly is secured to one of said meshing geared components,

another said cantilevered, rigid assembly is secured to the other said meshing geared components,

and the third said cantilevered, rigid assembly is secured to said fixed component,

thus creating a constant angular relationship between said cantilevered, rigid assemblies.

4. The releasable locking and folding mechanism in claim 2, wherein said followers contact said spring-loaded piston.
5. The releasable locking and folding mechanism in claim 2, when said releasable locking and folding mechanism is in its locked and open position, wherein the rotational freedom of said meshing geared components is constrained by said followers contacting said spring-loaded piston in one rotational sense and by a lack of gear teeth on said meshing geared components in the opposite rotational sense.
6. The releasable locking and folding mechanism in claim 2, when said releasable locking and folding mechanism is released from its locked position, wherein said means for retracting said piston against said spring is activated, unconstraining the rotational freedom of said followers against said spring-loaded piston.
7. The releasable locking and folding mechanism in claim 2, wherein said spring-loaded piston and said followers have an angled engagement tending to drive the piston into its highest possible position.
8. The releasable locking and folding mechanism in claim 2, when said releasable locking and folding mechanism is released from its locked position, the force of gravity acting upon said cantilevered, rigid assemblies tends to rotate said cantilevered, rigid assemblies away or toward one another, depending on the orientation of the said releasable locking and folding mechanism with respect to the force of gravity.
9. The stroller in claim 1, wherein said frame assembly consists of three rigid members which are:
 - a front fork which provides a mounting location for the front wheel in the tricycle configuration,
 - a rear support which provides mounting locations for the rear wheels in the tricycle configuration, and
 - a handle bar which provides a means for pushing said stroller.

9. The stroller in claim 9, wherein a means for supporting the infant's feet is secured to said front fork.
10. The stroller in claim 9, wherein said mounting location for the front wheel consists of a notch in which the axle of said front wheel is seated.
11. The stroller in claim 9, wherein said mounting locations for the rear wheels consist of a hub assembly which provides a deployable brake to constrain the rotation of each of said rear wheels independently and a means for quick removal of said rear wheels.
12. The stroller in claim 11, wherein said deployable brake consists of a lever, pinned to the hub assembly, which, when rotated, engages a toothed disk fixed to said rear wheel.
13. The stroller in claim 12, wherein a spring-loaded rod is attached to an arm of said lever and to said hub assembly, tending to force said brake lever to a fully deployed or fully undeployed position.
14. The stroller in claim 11, wherein the means for quick removal of said rear wheels consists of a spring-loaded pin which engages a notch in the axle of said rear wheel, so that when said pin is forced against said spring, said axle is free to move in and out of said hub assembly.
15. The stroller in claim 1, wherein said means for sheltering the infant from weather consists of a piece of fabric supported by a batten or bent rod, the batten being secured to said shelter support means.
16. The stroller in claim 15, wherein said shelter support means consists of a rotating piece pivotally attached to said handle bar; said rotating piece being pinned to a spring-loaded rod.
17. The stroller in claim 16, wherein rotational freedom of said rotating piece is constrained by a fastener seating in a groove on said rotating piece.

18. The stroller in claim 16, wherein said spring-loaded rod tends to force said rotating piece to either of the constrained rotational limits.

**COLLAPSIBLE BABY STROLLER
AND RELEASABLE LOCKING AND FOLDING MECHANISM THEREFOR**

Abstract: A baby stroller for transporting an infant over flat, rough, or uneven terrain at speeds faster than normal walking speed is disclosed. This baby stroller can be folded to make it easier to stow and transport. The folding mechanism, a unique feature of the design, enables the user to fold and unfold the stroller with one hand. Other features of the stroller include a quick release mechanism for the rear wheels, a foot-activated parking brake, and a canopy deployment mechanism

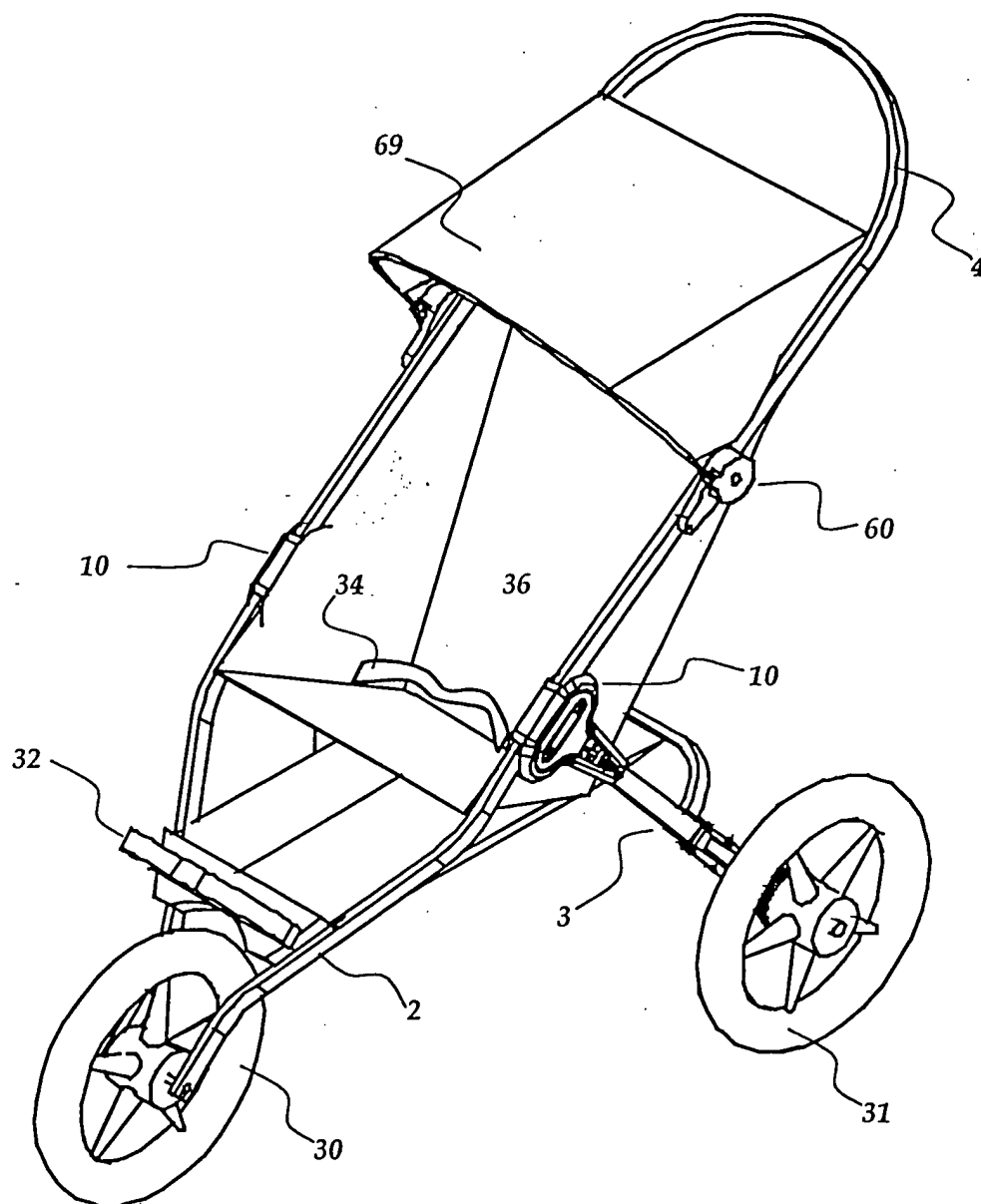


FIG. 1

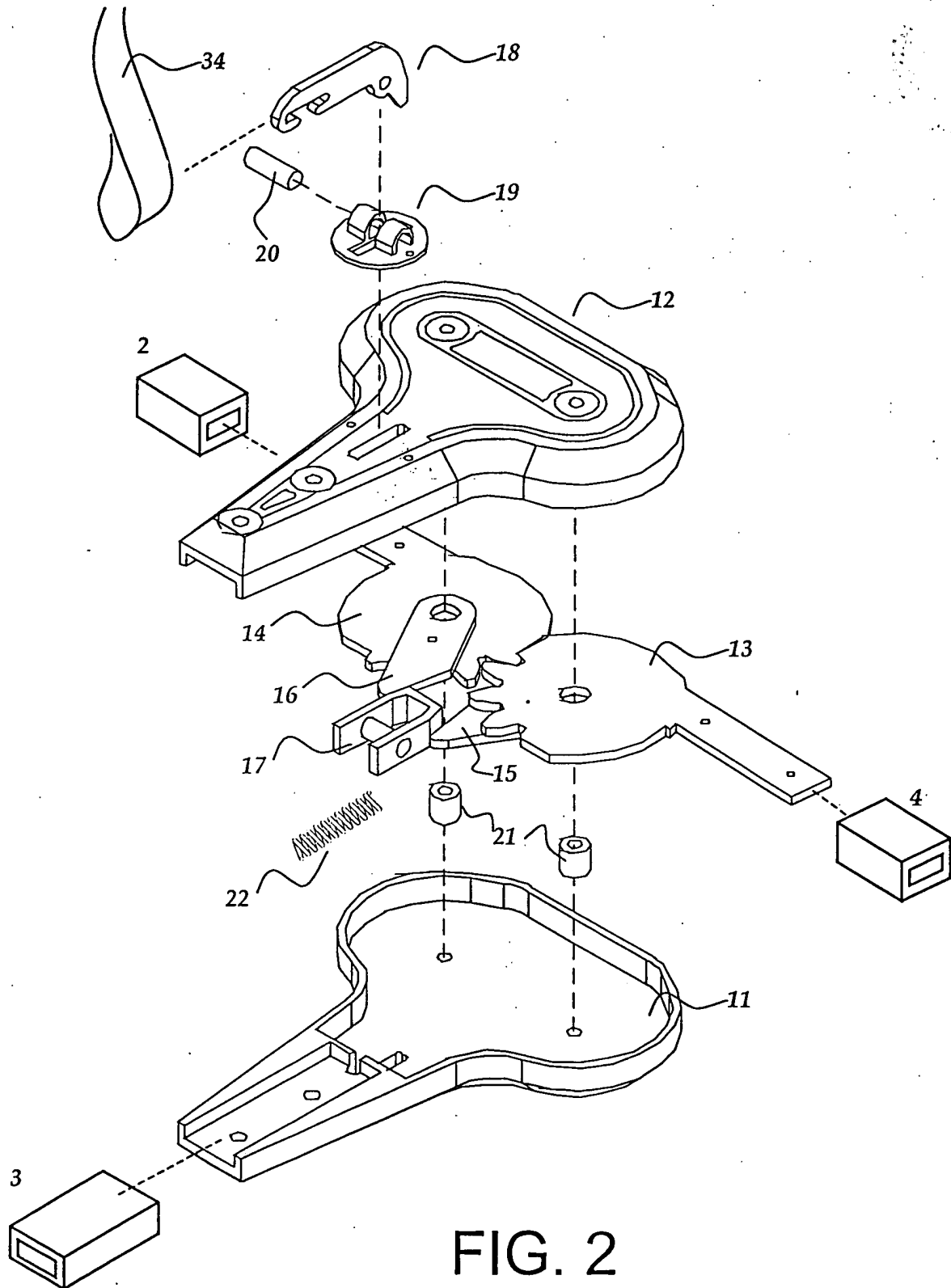


FIG. 2

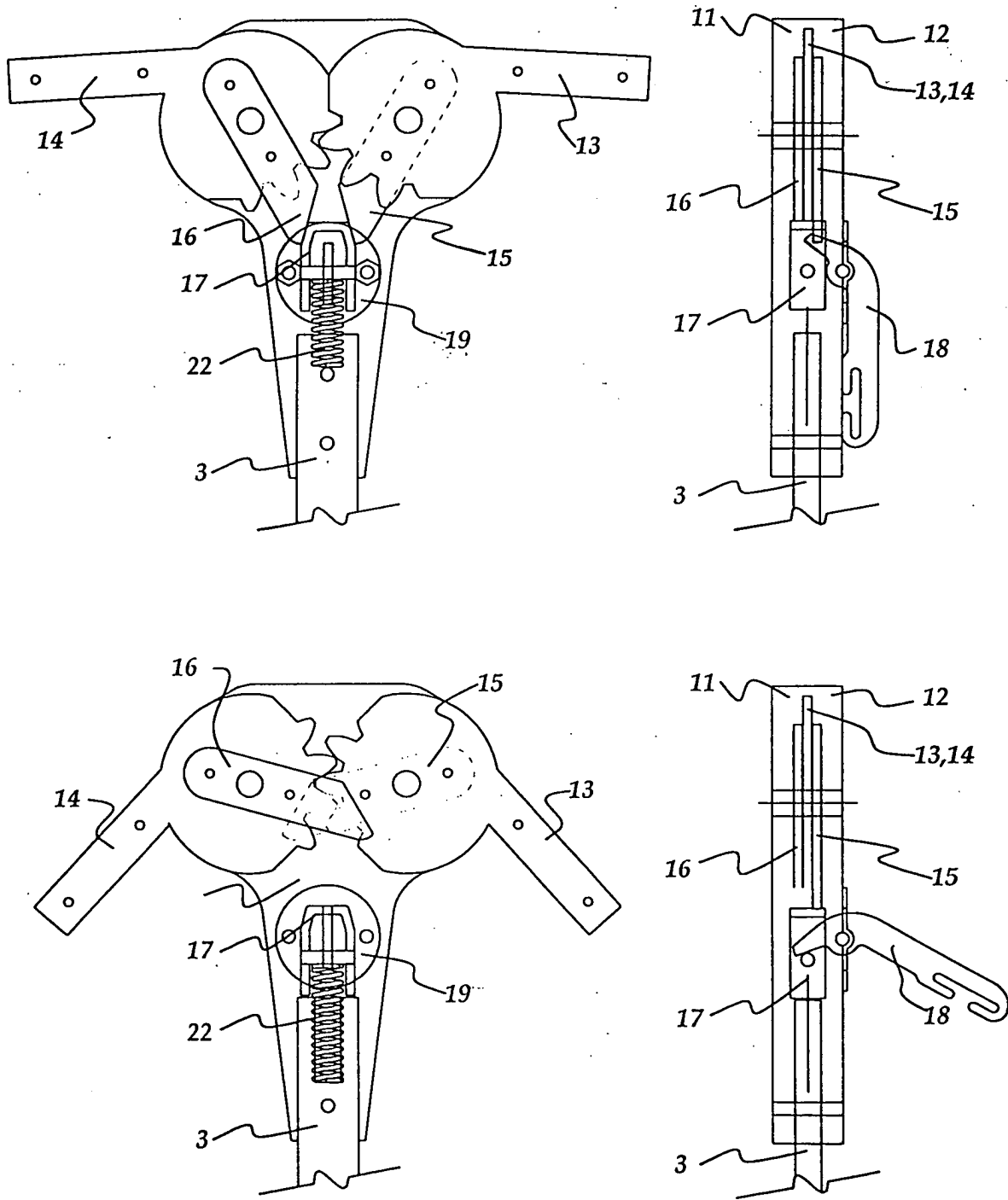


FIG 3

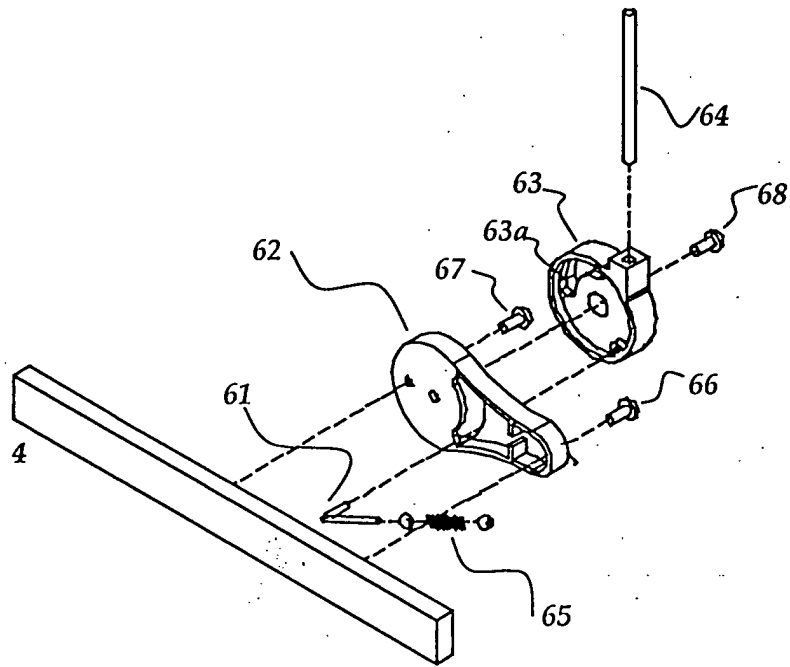


FIG. 4

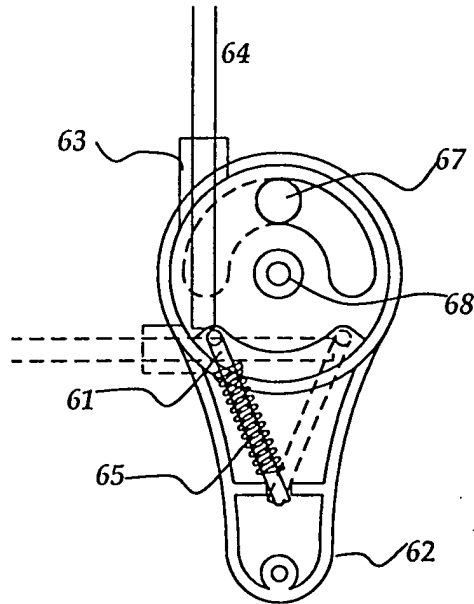


FIG. 5

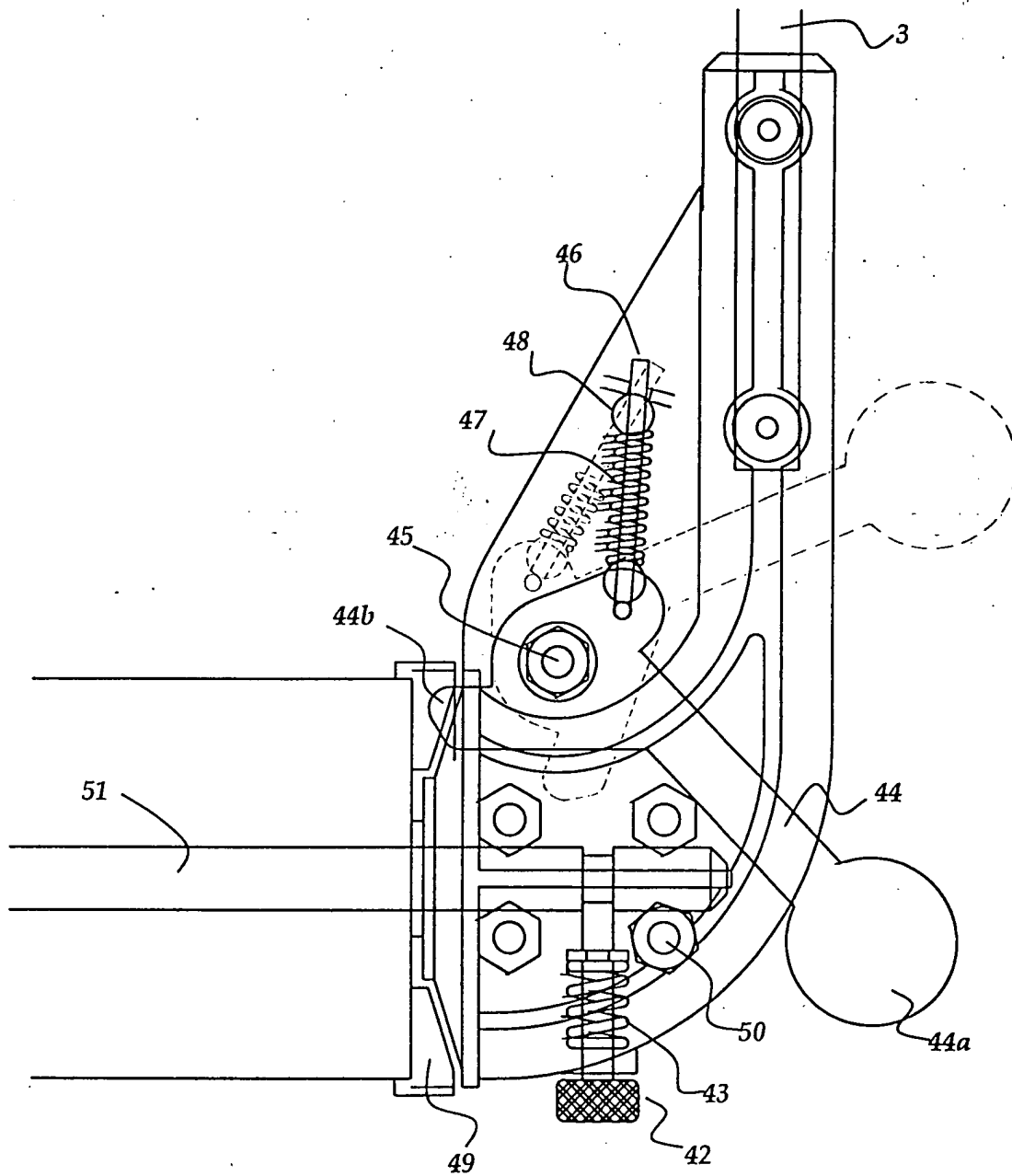


FIG. 6

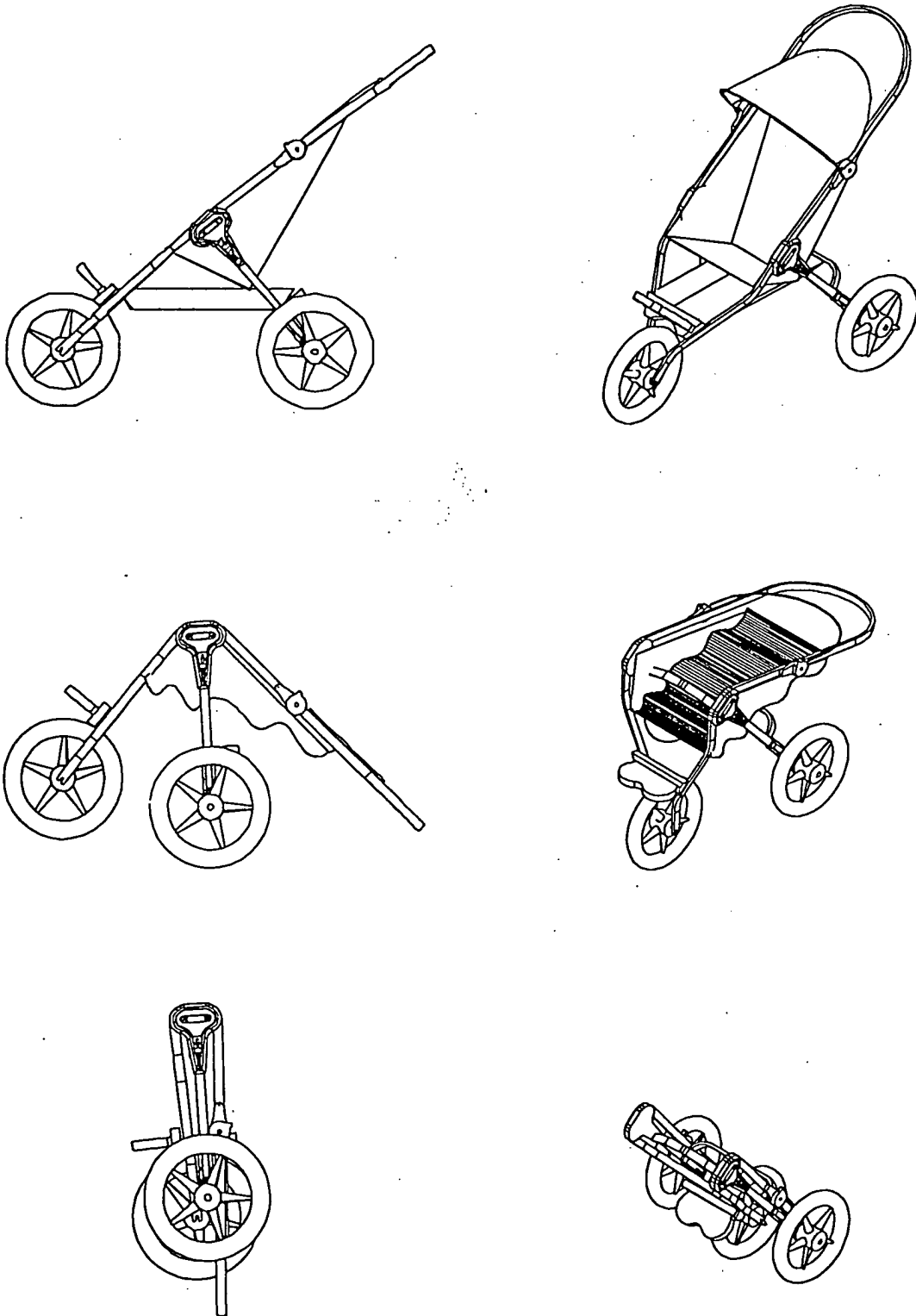


FIG. 7